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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,513	07/16/2004	Georgios L. Varsamis	SSW001	4512

23444 7590 08/10/2006

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EXAMINER	
HUGHES, SCOTT A	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/710,513	VARSAMIS ET AL.	
	Examiner	Art Unit	
	Scott A. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-74 and 96-113* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-74 and 96-113* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments with respect to claims 20-74 and 96-113 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendments to the claims are sufficient to overcome the claim objections and 35 USC 112 rejections of the prior office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 101 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 101 recites the limitation "said common conductor." There is insufficient antecedent basis for this limitation in the claim. Claim 101 depends from claim 96, and a common conductor referred to in claim 100, but not in claim 96.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20-26, 35-51, 53-55, 57-59, 96-103, 105-16, 108-110, and 112-113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer (5157392) in view of Siems (4072923).

With regard to claim 20, Zimmer discloses a sensor array (Fig. 1). Zimmer discloses a plurality of sensor pods 15 (Column 3, Lines 5-45) each characterized by having a sensor 36,37 therein operatively coupled to a memory 31, a processor 32 operatively coupled to the memory, and a first telemetric communications interface 30 operatively coupled to the memory (Fig. 1) (Column 4, Line 35 to Column 5, Line 11). Zimmer discloses a telemetry and control module 10 communicatively coupled to the first telemetric communications interface of the first of the plurality of sensor pods (Fig.1) (Column 3, Line 5 to Column 4, Line 45; Column 7, Line 15 to Column 8, Line 15). Zimmer discloses that each of the sensor pods sends its data upwards from its own memory through the telemetry unit to the pods above until it reaches the telemetry control module in the top of the borehole (Column 3, Line 5 to Column 4, Line 45; Column 7, Line 15 to Column 8, Line 15). Zimmer does not disclose that this telemetric transmission is done by using first and second telemetric interfaces in the sensor pods. Zimmer only discloses a first telemetric interface in each device that sends the data upwards through higher devices to the main unit. Siems teaches relaying seismic data from one sensor unit to another until all of the data reaches a central station (abstract; Column 4). Siems teaches that this is done using a first interface 68 and a second interface 66, each coupled to a memory 60 (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63). Siems teaches that the

second telecommunications interface of a first of a plurality of sensor units is coupled to the first telecommunications interface of a second of the plurality of units (Figs. 1-3). It would have been obvious to modify Zimmer to include a first and second interface for communication of data between sensor units as taught by Siems so that the data from lower units and from sensors in a unit can both be received, manipulated, and retransmitted up to the central monitoring unit. In this way, the signals from the sensor array can be resynchronized and reamplified at each unit so that signals from lower units do not attenuate and so that the signal to noise ratio does not become too great as would happen if the signal were sent from the lower unit straight to the central monitoring station without being received by a second interface of a higher sensor unit, regenerated, and then retransmitted from the first interface of the higher unit as taught by Siems.

With regard to claim 21, Siems teaches that each of the plurality of sensor pods is arranged to simultaneously transfer first data from the memory to the first telemetric communications interface and second data from the second telemetric communications interface to the memory (Figs. 2-4) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63; Columns 8-9). It would have been obvious to modify Zimmer to include simultaneously transferring the data as taught by Siems so that the data is continuously transmitted and the timing between pulses is not interrupted.

With regard to claims 22-23, Zimmer discloses that first pod data is produced by the sensor of the first of the plurality and transferred to the memory of the first of the

plurality. Zimmer discloses that second pod data is produced by the sensor of the second of the plurality and transferred to the memory of the second of the plurality. Zimmer discloses that first pod data is transferred from the memory of the first of the plurality through the first telemetric communications interface of the first of the plurality to the telemetry and control module (Column 2, Lines 5-55; Column 4, Lines 23-65; Column 6, Lines 1-33; Column 7, Line 15 to Column 8, Line 15). Zimmer does not disclose that second pod data is transferred from the memory of the second of the plurality through the first telemetric communications interface of the second of the plurality and through the second telemetric communications interface of the first of the plurality to the memory of the first of the plurality. Zimmer discloses that the second pod data is transferred through the telemetry unit of the second pod and through the first pod to the main telemetry and control module (Columns 6-7). Zimmer does not disclose that the data from the second pod is transferred from the first interface of the second pod to the second interface of the first device and to the memory of the first device before being transferred to the telemetry and control module. Siems teaches transferring data from a memory of the first of plurality to a central control and simultaneously transmitting second data from a second unit to the first unit. Siems teaches that the data from the second sensor unit is transferred from the memory of the second unit to the first interface of the second unit, then from the second interface of the second unit to the first interface of the first unit and to the memory of the first unit (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63; Columns 8-9).

The statements related to the pod data and transfer of the data are essentially method limitations. Thus, these claims as well as other statements of intended use in subsequent claims relating to the pod data and transfer of the data do not serve to patentably distinguish the claimed structure over that of the reference. These limitations are not to the structure of the device being claimed, but are rather directed to the method of using the device to transfer data. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

> A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647
>
> Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.
>
> Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

With regard to claim 24, Zimmer discloses that the data from the first memory, which would include the second pod data sent to the memory as taught by Siems, is transferred to the telemetry control module using the first telemetric interface (Column 7, Line 15 to Column 8, Line 15).

With regard to claim 25, Zimmer discloses that the plurality includes the first of the plurality, a last of the plurality and at least one inner of the plurality, each of the at

least one inner of the plurality has the first telemetric communications interface coupled to a first adjacent of the plurality and that the device is also coupled to a second adjacent of the plurality, the first telemetric communications interface of the last of the plurality is coupled to one of the at least one inner of the plurality, and the first telemetric communications interface of the first of the plurality is coupled to the telemetry and control module and the first of the plurality is coupled to the first telemetric communications interface of one of the at least one inner of the plurality (Fig. 1; abstract; Column 2, Lines 5-55; Column 6, Lines 1-33; Columns 7-8). Zimmer discloses M recording stations 15 (sensor pods) connected together by a telemetry cable 27. Each recording station has a first telemetric communications interface, and also has other telemetric communications means that allow for the connection of the telemetry cable and the transfer of data along the telemetry cable from one station to the next. This is a first, inner, and last of a plurality of sensor pods. Zimmer does not disclose that this telemetric transmission is done by using first and second telemetric interfaces in the sensor pods. Zimmer only discloses a first telemetric interface in each device that sends the data upwards through higher devices to the main unit. Siems teaches relaying seismic data from one sensor unit to another until all of the data reaches a central station (abstract; Column 4). Siems teaches that this is done using a first interface 68 and a second interface 66, each coupled to a memory 60 (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63). Siems teaches that the second telecommunications interface of a first of a plurality of sensor units is coupled to the first telecommunications interface of a second of the

plurality of units (Figs. 1-3). It would have been obvious to modify Zimmer to include a first and second interface for communication of data between sensor units as taught by Siems so that the data from lower units and from sensors in a unit can both be received, manipulated, and retransmitted up to the central monitoring unit. In this way, the signals from the sensor array can be resynchronized and reamplified at each unit so that signals from lower units do not attenuate and so that the signal to noise ratio does not become too great as would happen if the signal were sent from the lower unit straight to the central monitoring station without being received by a second interface of a higher sensor unit, regenerated, and then retransmitted from the first interface of the higher unit as taught by Siems.

With regard to claim 26, Zimmer discloses that last pod data is produced by the seismic sensor of the last of the plurality and transferred to the memory of the last of the plurality, the last pod data is transferred from the memory of the last of the plurality to the telemetry and control module via each of the at least one inner of the plurality, and via the first of the plurality (Fig. 1; abstract; Column 2, Lines 5-55; Column 6, Lines 1-33; Columns 7-8). Zimmer discloses M recording stations 15 (sensor pods) connected together by a telemetry cable 27. Each recording station has a first and second telemetric communications interface, and also has other telemetric communications means that allow for the connection of the telemetry cable and the transfer of data along the telemetry cable from one station to the next. Zimmer does not disclose that the data is temporarily stored in the memory of each of the inner pods of the plurality nor that the data is temporarily stored in the memory of the first of the plurality before being sent to

the telemetry and control module 10. Siems teaches that data from each unit is transmitted to a subsequent unit, stored in the memory of the subsequent unit, and then transferred along to higher units until it reaches the central recording station (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63). It would have been obvious to modify Zimmer to include storing the data in the memory of each unit as taught by Siems in order to be able to manipulate the data by reamplifying and resynchronizing the data before it is sent on to the next unit.

With regard to claim 35, Zimmer discloses that communication between the plurality of sensor pods uses a communications protocol, and communication between the telemetry and control module and the first of the plurality uses a communications protocol (Column 6, Column 7, Line 1 to Column 8, Line 50).

With regard to claim 36, Zimmer discloses that the communications protocol is a serial communications protocol (Column 6, Column 7, Line 1 to Column 8, Line 50).

With regard to claim 37, Siems teaches repeaters coupled between the pods arranged to increase communication range between the two of a plurality of sensor pods (abstract, Column 7). It would have been obvious to modify Zimmer to include repeaters as taught by Siems in order to be able to transmit the data over the cable from all of the sensor units to the surface without significant signal attenuation and signal distortion due to noise from the transmission along the cable.

With regard to claim 38, Zimmer discloses that each of the plurality further comprises, a clamping mechanism 28 arranged to releasably clamp the sensor pod to a borehole wall (Column 2, Lines 38-55; Column 4, Lines 35-45).

With regard to claim 39, Zimmer discloses that each of the plurality is further characterized by, the clamping mechanism being controlled by the sensor pod in response to a signal received at the first telemetric communications interface (Column 2, Lines 38-55; Column 4, Lines 35-45; Column 6, Lines 1-53).

With regard to claim 40, Zimmer discloses that the signal originates from the telemetry and control module (Column 6, Lines 1-53). Zimmer discloses that the telemetry and control module provides a prompt signal, and that the device responds to this prompt signal to clamp and begin taking data.

With regard to claim 41, Zimmer does not disclose a surface controller coupled to the telemetry and control module, wherein the signal originates from the surface controller. Zimmer does disclose that the telemetry cable 16 goes from the telemetry control unit to surface equipment. It would have been obvious to have a surface controller coupled to the telemetry cable 16 to send the signals to the downhole equipment in order to have a central computer than can be used by an operator to control the downhole equipment and data transfer and make adjustments as needed.

With regard to claim 42, Zimmer discloses that the signal originates from an adjacent one of the plurality of sensor pods telemetric communications interface (Column 2, Lines 38-55; Column 4, Lines 35-45; Column 6, Lines 1-53). Zimmer does not disclose that the pods have second communication interfaces. Siems teaches sensor units with first and second interfaces, wherein the first interface of one unit is connected to the second interface of a second unit (Figs. 1-2). Siems further teaches that signals are passed from one unit to the another through from a second interface to

a first interface over an interrogation link 16 (Column 9, Line 40 to Column 10). Zimmer discloses that the signals go from the first pod to the last pod (Fig. 1), and therefore the signal would travel from one device to the telemetric communications interface of the next as taught by Siems.

With regard to claim 43, Zimmer discloses that each of the plurality further comprises, a processor 32 coupled to the memory 31, the first telemetric communications interface 30 and the second telemetric communications interface 33, as taught by Siems and discussed above, the processor arranged to interpret signals received at the first telemetric communications interface and control the sensor pod (Column 4, Line 45 to Column 6, Line 52).

With regard to claim 44, Zimmer discloses that the sensor is a seismic sensor 36, 37 (Column 4, Line 45 to Column 5, Line 5).

With regard to claim 45, Zimmer discloses a plurality of cables 27, wherein each of the plurality of sensor pods 15 has upper and lower ends and characterized by being arranged to be repeatably coupled and uncoupled to a first and second of the plurality of cables at both the upper and lower ends, and the plurality of sensor pods are removably coupled together upper end to lower end by the plurality of cables to form a string, with a first end of the string of sensor pods removably coupled to the telemetry and control module 10 with one 16 of the plurality of cables (Fig. 1) (Column 4, Lines 23-40; Column 7, Lines 15-40).

With regard to claim 46, Zimmer discloses that each of the plurality of sensor pods is characterized by, having a processor 32 arranged to communicate with the

telemetry and control module 10 and with other sensor pods and designed to store an identification (Column 2, Lines 5-55; Column 4, Lines 1-44; Column 5, Lines 15-27). Zimmer discloses that each processor contains information about the location of the station, and this is read as its identification since the location would correspond to the device in the data.

With regard to claim 47, Zimmer discloses that the telemetry and control module can query each of the plurality of sensor pods, and each of the plurality of sensor pods is arranged to answer a query (Column 4; Column 5, Lines 15-27, Column 6).

With regard to claim 48, Zimmer discloses that the telemetry and control module harmonizes with the plurality of sensor pods to establish a unique identification for each of the plurality of sensor pods, and the telemetry and control module registers the position in the string of each of the sensor pods relative to the plurality of sensor pods (Column 4, Lines 1-40; Column 5, Lines 15-27, Column 6). Zimmer discloses that each processor contains information about the location of the station, and this is read as its identification since the location would be interpreted by the control module 10 when taking data from each station.

With regard to claim 49, Zimmer discloses using a particular identification, the telemetry and control module queries a specific one of the plurality of sensor pods, and the specific one of the plurality of sensor pods answers the telemetry and control module (Column 5, Lines 15-27, Column 6).

With regard to claim 50, Zimmer discloses that the telemetry and control module queries about a status of a sensor (Column 2; Column 4; Column 5, Lines 15-27).

Zimmer discloses that information about each sensor is part of the data, and that the main telemetry unit interrogates the sensor stations 15 for their data. Therefore, the main telemetry and control module queries about the status of the sensors.

With regard to claim 51, Zimmer discloses that the telemetry and control module queries about a status of a memory (Column 2; Column 5, Lines 15-27).

With regard to claim 53, Zimmer discloses that the telemetry and control module queries about a status of a clamping mechanism (Column 2, Lines 15-55; Column 4; Column 6, Lines 34-62). Zimmer discloses that information about each clamping mechanism is part of the data, and that the main telemetry unit interrogates the sensor stations 15 for their data. Therefore, the main telemetry and control module queries about the status of the clamping mechanisms.

With regard to claim 54, Zimmer discloses that using a particular identification, the telemetry and control module commands a function of a specific one of the plurality of sensor pods, and the specific one of the plurality of sensor pods performs the function (Column 2; Column 5, Lines 15-27).

With regard to claim 55, Zimmer discloses that the telemetry and control module commands to manipulate a clamping mechanism (Column 2, Column 4; Column 6, Lines 34-62).

With regard to claim 57, Zimmer discloses that the telemetry and control module sends commands to control a sensor (Column 2, Lines 15-26; Column 4; Column 5, Lines 15-27).

With regard to claim 58, Zimmer discloses that the telemetry and control module simultaneously commands each of the plurality of sensor pods to record data (Column 5, Lines 15-27; Column 7, Line 15 to Column 8, Line 15).

With regard to claim 59, Zimmer discloses that the telemetry and control module nearly simultaneously commands each of the plurality of sensor pods to transmit data (Column 5, Lines 15-27; Column 7, Line 15 to Column 8, Line 15).

With regard to claim 96, Zimmer discloses a sensor array for conducting a downhole survey (Fig. 1). Zimmer discloses a string of intelligent sensor pods 15 (Fig. 1) each sensor pod including a sensor 36,37 and a memory 31 (Column 4, Line 45 to Column 5, Line 11). Zimmer discloses a telemetry and control module 10 operatively connected to a first end of the string (Fig. 1) (Column 3, Lines 5-45). Zimmer discloses means for collecting data with the sensors (Column 4, Line 45 to Column 5, Line 11). Zimmer discloses means for storing the data in the memory (Column 4, Line 45-68; Column 5, Line 15 to Column 6, Line 35). Zimmer discloses means for transmitting the data from the memory to the telemetry and control module (Column 7, Line 15 to Column 8, Line 50). Zimmer does not disclose that the transmitting is done in a bucket brigade transfer, where a bucket brigade transfer is defined by each sensor pod transmitting data stored in the memory of the sensor pod to a memory of an adjacent device in the string of intelligent sensor pods in a first direction and each sensor pod receiving data, if any, from a memory of an adjacent device in the string of sensor pods in a second direction opposite the first direction, if any, and storing the received data in the memory of the sensor pod. Siems teaches an array of seismic sensor units in a

cable (abstract). Siems teaches transmitting the data between the units in a bucket brigade transfer as described above. Siems teaches relaying seismic data from one sensor unit to another until all of the data reaches a central station (bucket brigade) (abstract; Column 4). Siems teaches that this is done using a first interface 68 and a second interface 66, each coupled to a memory 60 (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63). It would have been obvious to modify Zimmer to include a bucket brigade transfer for communication of data between sensor units as taught by Siems so that the data from lower units and from sensors in a unit can both be received, manipulated, and retransmitted in an adjacent unit up to the central monitoring unit. In this way, the signals from the sensor array can be resynchronized and reamplified at each unit so that signals from lower units do not attenuate and so that the signal to noise ratio does not become too great as would happen if the signal were sent from the lower unit straight to the central monitoring station without being received by a second interface of a higher sensor unit, regenerated, and then retransmitted from the first interface of the higher unit as taught by Siems.

With regard to claim 97, Zimmer discloses that the survey is a seismic survey and that the data are seismic data (abstract).

With regard to claim 98, Siems teaches that each of the plurality of sensor pods is arranged to simultaneously transfer first data from the memory to the first telemetric communications interface and second data from the second telemetric communications interface to the memory (Figs. 2-4) (abstract; Column 4, Line 43 to Column 5, Line 23;

Column 6, Line 55 to Column 7, Line 63; Columns 8-9). It would have been obvious to modify Zimmer to include simultaneously transferring the data as taught by Siems so that the data is continuously transmitted and the timing between pulses is not interrupted.

With regard to claim 99, Zimmer discloses that the transmitting and receiving of data between devices is sequential (Column 7, Line 15 to Column 8, Line 15).

With regard to claim 100, Zimmer discloses means for arming each sensor pod within the string to receive a simultaneous trigger signal by enabling a direct communications path along a common conductor to each sensor pod within the string (Column 7, Line 40-63).

With regard to claim 101, as best understood by the examiner, Zimmer discloses means for powering the string of sensor pods via the common conductor (Column 3, Lines 5-26) (Fig. 1).

With regard to claim 102, Zimmer discloses means for simultaneously triggering each sensor pod within the string of intelligent pods to begin recording data (Column 6, Lines 1-9).

With regard to claim 103, Zimmer discloses that the triggering is caused by a signal transmitted by the telemetry and control module (computer 26 in control module 10) along the conductor (Column 6, Lines 1-9).

With regard to claim 105, Zimmer discloses means for simultaneously triggering the sensor pods to begin bucket brigade transfer, as taught by Siems (Column 6, Lines 1-9; Columns 7-8) and means for disabling the direct communications path after the

triggering, forcing communications along the string to flow through the memory of the sensor pods (Column 8, Lines 1-50).

With regard to claim 106, Zimmer discloses that the triggering is caused by a signal transmitted by the telemetry and control module (computer 26 in control module 10) along the conductor (Column 6, Lines 1-9, Columns 7-8).

With regard to claim 108, Zimmer discloses means for disconnecting the telemetry and control module from the string of pods and means for disassembling the string of pods (Column 4, Column 10, Lines 1-30).

With regard to claim 109, Zimmer discloses means for automatically determining the composition and characteristics of the string by querying the sensor pods (Column 5, Lines 15-30; Column 6, Lines 34-54).

With regard to claim 110, Zimmer discloses means for selectively clamping the sensor pods to the wall of the borehole 28,39, means for selectively unclamping the sensor pods, 28,39, and means for controlling the selective clamping and unclamping with the telemetry and control module (Column 4, Lines 20-45; Column 6, Lines 34-53).

With regard to claim 112, Siems teaches repeaters coupled between the pods arranged to increase communication range between the two of a plurality of sensor pods (abstract, Column 7). It would have been obvious to modify Zimmer to include repeaters as taught by Siems in order to be able to transmit the data over the cable from all of the sensor units to the surface without significant signal attenuation and signal distortion due to noise from the transmission along the cable.

With regard to claim 113, Zimmer discloses a sensor array (Fig. 1). Zimmer discloses a first sensor pod 15 having a first memory 31 and a first sensor 36,37 disposed therein, the first sensor in communication with the first memory (Column 3, Lines 5-45; Column 4, Line 45 to Column 5, Line 11). Zimmer discloses a second sensor pod (Zimmer discloses a string of pods, and shows a second pod 15 below the first pod in Fig. 1) having a second memory and a second sensor disposed therein, said second sensor pod connected to the first sensor pod by a first cable segment 27, with the second sensor being in communication with the second memory (Fig. 1) (Column 2, Lines 30-35; Column 3, Lines 5-45; Column 4, Line 45 to Column 5, Line 11). Zimmer discloses a third sensor pod (Zimmer discloses using a string of M sensor pods, with a typical number being 25 sensor pods). Zimmer discloses the third pod having a third memory and a third sensor disposed therein, said third sensor pod connected to the second sensor pod by a second cable segment 27, with the third sensor being in communication with the third memory (Fig. 1) (Column 2, Lines 30-35; Column 3, Lines 5-45; Column 4, Line 45 to Column 5, Line 11). The second and third sensor pod have a memory and sensors that are the same as those disclosed in the representative first pod as Zimmer discloses that all the sensor units are identical. Zimmer does not disclose that the memory of the first and second pods are in communication, nor that the memory of the second and third pods are in communication. Siems teaches a string of seismic sensor units disposed in a cable that record data and transmit data from one sensor unit to the next until the data reaches a central recorder (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63).

Siems teaches that a memory 60 (Figs. 2-4) in each of the devices is coupled to the memory of the adjacent devices (Figs. 1-3) (abstract; Column 4, Line 43 to Column 5, Line 23; Column 6, Line 55 to Column 7, Line 63). Siems also teaches that data contents of the memories are transferred to the memories of adjacent units that are closer to the central control station in a bucket brigade fashion (abstract; Column 4). It would have been obvious to modify Zimmer to include a bucket brigade transfer of data from one memory to the memory of an adjacent device for communication of data between sensor units as taught by Siems so that the data from lower units and from sensors in a unit can both be received, manipulated, and retransmitted in an adjacent unit up to the central monitoring unit. In this way, the signals from the sensor array can be resynchronized and reamplified at each unit so that signals from lower units do not attenuate and so that the signal to noise ratio does not become too great as would happen if the signal were sent from the lower unit straight to the central monitoring station without being received by a second interface of a higher sensor unit, regenerated, and then retransmitted from the first interface of the higher unit as taught by Siems.

The statements related to the data contents of the memories and how these data are transferred are essentially method limitations. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

Claims 27-34 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer in view of Siems as applied to claim 20 and 54 above, and further in view of Laborde.

With regard to claim 27, Zimmer does not disclose that each of the plurality is further characterized by a communications bypass coupled between the first telemetric communications interface and the second telemetric communications interface, the communications bypass having a switch element having a first state, which enables the bypass, and a second state which disables the bypass. Laborde discloses bypass switches in nodes between first and second telemetric communications interfaces (Fig. 4) (Column 4, Line 40 to Column 5, Line 5; Column 6). It would have been obvious to modify Zimmer to include bypass switches as taught by Laborde in order to be able to bypass a device whose communication channels have failed so that data can still be transferred to the surface.

With regard to claim 28, Laborde discloses that each of the plurality is further characterized by the switch element being controlled by the sensor pod in response to a signal received at the first telemetric communications interface (Column 4, Line 40 to Column 6, Line 57).

With regard to claim 29, Laborde discloses that the signal originates from a telemetry and control module 37,362 (Column 5).

With regard to claim 30, Laborde discloses a surface controller coupled to the telemetry and control module, wherein the signal originates from the surface controller 300 (Columns 5-6). It would have been obvious to modify Zimmer to include the surface controller coupled to the telemetry and control module as taught by Laborde in order to control operations of switch elements to bypass devices that have failed.

With regard to claim 31, Laborde discloses that the signal originates from the second telemetric communications interface of an adjacent one of the plurality of sensor pods (Column 4, Line 40 to Column 6). Laborde discloses that the devices monitor the channels of the devices above and below them, and can send a signal to operate the switches based on this monitoring. The monitoring would be done through the second telemetric communications interface of the device for the device above it.

With regard to claim 32, Laborde discloses that the switch elements of each of the plurality are in the first state, and each of a plurality of pods nearly simultaneously receives the signal at the first telemetric communications interface from the telemetry and control module (Column 5, Line 5 to Column 6, Line 48).

With regard to claim 33, Laborde discloses a surface controller 300 coupled to the telemetry and control module, wherein the switch elements of each of the plurality are in the first state, and each of the plurality of the pods nearly simultaneously receives the signal at the first telemetric communications interface from the surface controller (Column 5, Line 5 to Column 6, Line 48).

With regard to claim 34, Laborde discloses switch elements operated by a signal from a telemetry and control module. It would have been obvious to modify Zimmer to include the surface controller coupled to the telemetry and control module as taught by Laborde in order to control operations of switch elements to bypass devices that have failed. Zimmer discloses a plurality of sensors that measure data and transfer the data to the memory of each of the sensor pods upon receipt of a signal from the telemetry and control device (Column 2, Lines 5-55; Column 7, Line 1 to Column 8, Line 50). It would have been obvious to modify Zimmer to include the signal to operate switches with as taught by Laborde with the signal to measure data in order to measure data with the sensor pods and transfer this data along the devices which have been determined to be in working condition (do not a communication channel failure) so that data is not lost by a failed station.

With regard to claim 56, Zimmer does not disclose that the telemetry and control module commands to manipulate a switch element. Laborde discloses bypass switches in nodes between first and second telemetric communications interfaces (Fig. 4) (Column 4, Line 40 to Column 5, Line 5). Laborde discloses commands from a control module that manipulate the switches (Columns 5-6). It would have been obvious to

modify Zimmer to include switches and commands to manipulate switches as taught by Laborde in order to be able to bypass a device whose communication channels have failed so that data can still be transferred to the surface.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer in view of Siems as applied to claim 49 above, and further in view of Tubel (5730219).

With regard to claim 52, Zimmer does not disclose that the telemetry and control module queries about a voltage level. Zimmer discloses that the telemetry and control module communicates with the sensor pods, but does not specify that voltage is enquired about (Column 2, Lines 5-55; Column 5, Lines 15-27; Column 6). Zimmer discloses that the voltage is monitored in borehole telemetry systems (Column 12). It would have been obvious to modify Zimmer to query about the voltage level as taught by Tubel in order to make sure that the signals are transmitted at the appropriate voltages.

Claims 60-66, 68-70, 72-74, 104, 107, and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer in view of Siems as applied to claims 20, 45, 96, 102, and 105 above, and further in view of Endo.

With regard to claim 60, Zimmer does not disclose a main controller coupled to the telemetry and control module 10. Zimmer discloses that the telemetry and control module 10 is connected to surface equipment through wire 16, but does not disclose the specifics of the surface equipment. Endo discloses a telemetry and control module 150

connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 61, Zimmer discloses that each of the plurality of sensor pods is characterized by, having a processor 32 arranged to communicate with the telemetry and control module and with other sensor pods and to store an identification (Column 2; Column 4, Lines 1-44; Column 5, Lines 15-27). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 62, Zimmer discloses that the telemetry and control module is arranged to query each of the plurality of sensor pods, and each of the plurality of

sensor pods is arranged to answer a query (Column 4; Column 5, Lines 15-27; Column 6). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 63, Zimmer discloses that the telemetry and control module is arranged to harmonize with the plurality of sensor pods to establish a unique identification for each of the plurality of sensor pods, and the telemetry and control module is arranged to register the position in the string of each of the sensor pods relative to the plurality of sensor pods (Column 4, Lines 1-40; Column 5, Lines 15-27; Column 6). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a

terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 64, Zimmer discloses that using a particular identification, the telemetry and control module is arranged to query a specific one of the plurality of sensor pods, and the specific one of the plurality of sensor pods is arranged to answer the telemetry and control module computer (Column 5, Lines 15-27; Column 6). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 65, Zimmer discloses that the telemetry and control module queries about a status of a sensor (Column 2, Lines 15-26; Column 4). Zimmer discloses that information about each sensor is part of the data, and that the main telemetry unit interrogates the sensor stations 15 for their data. Therefore, the main telemetry and control module queries about the status of the sensors. Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150

connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 66, Zimmer discloses that the telemetry and control module queries about a status of a memory (Column 2, Lines 15-26). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 68, Zimmer discloses that the telemetry and control module queries about a status of a clamping mechanism (Column 2, Lines 15-55; Column 4; Column 6, Lines 34-62). Zimmer discloses that information about each clamping mechanism is part of the data, and that the main telemetry unit interrogates the sensor

stations 15 for their data. Therefore, the main telemetry and control module queries about the status of the clamping mechanisms. Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 69, Zimmer discloses that using a particular identification, the telemetry and control module commands a function of a specific one of the plurality of sensor pods, and the specific one of the plurality of sensor pods performs the function (Column 2; Column 5, Lines 15-27). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to

provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 70, Zimmer discloses that the telemetry and control module commands to manipulate a clamping mechanism of a specific one of the pods (Column 2, Column 4; Column 6, Lines 34-62). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 72, Zimmer discloses that the telemetry and control module sends commands to control a sensor of a specific one of the pods (Column 2, Lines 15-26; Column 4; Column 5, Lines 15-27). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to

modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 73, Zimmer discloses that the telemetry and control module simultaneously commands each of the plurality of sensor pods to record data (Column 5, Lines 15-27; Column 7, Line 15 to Column 8, Line 15). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 74, Zimmer discloses that the telemetry and control module nearly simultaneously commands each of the plurality of sensor pods to transmit data (Column 5, Lines 15-27; Column 7, Line 15 to Column 8, Line 15). Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of

Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 104, Zimmer does not disclose a surface controller coupled to the telemetry and control module 10. Zimmer discloses that the telemetry and control module 10 is connected to surface equipment through wire 16, but does not disclose the specifics of the surface equipment. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 107, Zimmer does not disclose a surface controller coupled to the telemetry and control module 10. Zimmer discloses that the telemetry and control module 10 is connected to surface equipment through wire 16, but does not disclose the specifics of the surface equipment. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of

Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

With regard to claim 111, Zimmer discloses means for selectively clamping and unclamping the sensor pods from the borehole wall 28,39 and also means for controlling the clamping and unclamping (Column 4, Lines 20-45; Column 6, Lines 34-53). Zimmer does not disclose that the control signal is sent from a surface controller coupled to the telemetry and control module. Zimmer discloses that the telemetry and control module 10 is connected to surface equipment through wire 16, but does not disclose the specifics of the surface equipment. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer in view of Siems and Endo as applied to claim 69 above, and further in view of Laborde.

With regard to claim 71, Zimmer does not disclose that the telemetry and control module commands to manipulate a switch element. Laborde discloses bypass switches in nodes between first and second telemetric communications interfaces (Fig. 4) (Column 4, Line 40 to Column 5, Line 5). Laborde discloses commands from a control module that manipulate the switches (Columns 5-6). It would have been obvious to modify Zimmer to include switches and commands to manipulate switches as taught by Laborde in order to be able to bypass a device whose communication channels have failed so that data can still be transferred to the surface. Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer in view of Siems and Endo as applied to claim 64 above, and further in view of Tubel (5730219).

With regard to claim 71, Zimmer does not disclose that the telemetry and control module queries about a voltage level. Zimmer discloses that the telemetry and control module communicates with the sensor pods, but does not specify that voltage is enquired about (Column 2, Lines 5-55; Column 5, Lines 15-27; Column 6). Zimmer discloses that the voltage is monitored in borehole telemetry systems (Column 12). It would have been obvious to modify Zimmer to query about the voltage level as taught by Tubel in order to make sure that the signals are transmitted at the appropriate voltages. Zimmer does not disclose that the communication is with a main controller, but instead that it is with the main telemetry and control module. Endo discloses a telemetry and control module 150 connected to a plurality of sensor pods 160 in a borehole similar to the system of Zimmer (Fig. 2). Endo discloses a main controller 100 on the surface to control the system (Column 3, Lines 30-60; Column 4; Column 7 Line 28 to Column 8). It would have been obvious to modify Zimmer to include a surface main controller as taught by Endo in order to be able to synchronize the system to a terminal that can be used by an operator and to provide a main operations unit which an operator can use to send signals to downhole components of the system.

Conclusion

The cited prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A. Hughes whose telephone number is 571-272-6983. The examiner can normally be reached on M-F 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAH

JACK KEITH
SUPERVISORY PATENT EXAMINER